

## SECTION VII.—WEATHER AND DATA FOR THE MONTH.

## THE WEATHER OF THE MONTH.

## TEMPERATURE.

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[Washington, Oct. 3, 1915.]

## PRESSURE.

The distribution of the mean atmospheric pressure over the United States and Canada and the prevailing direction of the winds are graphically shown on Chart VII, while the average values for the month at the several stations, with the departures from the normal, are shown in Tables I and III.

For the month as a whole the barometric pressure was near or slightly above the normal over the sections to eastward of the Mississippi River, except along the coastal portions of New England and over the eastern Canadian Provinces. It was also above the normal over the upper Mississippi and middle and upper Missouri valleys and near the north Pacific coast. Over all other portions of the country the means for the month were below the normal, the greatest minus departures appearing in the central Rocky Mountain region and the Canadian Maritime Provinces.

The month opened with relatively high pressure over the eastern portion of the country, while in the Northwest low pressure obtained. Pressure continued high throughout most eastern districts during the next few days, after which it was generally below the normal until near the end of the first decade, due to the passage of a subtropical storm across this region. Elsewhere the pressure was near or slightly above the normal, except in the Northwest, where it was generally low.

During the second decade the pressure was above the normal over most northern and eastern districts, except in the extreme Northeast, where it was generally low. Elsewhere it was near or slightly below the normal.

Throughout the greater part of the third decade, relatively high pressure prevailed over most central and eastern districts, but in other sections it was generally low, due to the occurrence of rather extensive and well-defined depressions at frequent intervals during the latter part of the month. At the close abnormally low pressure prevailed throughout the southeastern districts, due to the appearance of a severe subtropical storm in that region, full details of which appear elsewhere, but over most northern districts from the Rocky Mountains to the lower Lakes the pressure was generally moderately high, while in the eastern Canadian Provinces and the extreme Northwest it was relatively low.

The distribution of the highs and lows was favorable for southerly and southwesterly winds in the great central valleys, the Lake region, and the New England States, northwesterly in the coastal portion of the Middle Atlantic States, northeasterly in the South Atlantic and east Gulf States, except over the southern Florida Peninsula, where they were easterly, southerly, and southeasterly in the west Gulf States, and northerly and northwesterly along the Pacific coast.

The month opened with low temperatures over the Central States, but within a few days they had risen to near the normal in nearly all districts and seasonable weather very generally prevailed in all parts of the country until the close of the first week. The mean temperatures for the week were above the normal throughout the Northern States and along the Pacific coast, the first time in more than three months that the weekly mean temperatures were above the normal to an appreciable extent between the Great Lakes and the Rocky Mountains. At the same time temperatures in the South were below the normal, the week being the first there for a considerable period with average temperatures below the normal to any considerable degree.

Throughout the second week warm and oppressive weather prevailed in the central, eastern, and southern districts, but in the Northwest the week was decidedly cool for the season. Over all districts from the upper Mississippi to the southern Rocky Mountains and to the eastward the mean temperatures for the week were above normal, the daily departures ranging from 10° to 12° in the Middle Atlantic States. Elsewhere the weekly means were below the normal, the minus departures being from 15° to 17° per day in portions of Montana.

During the early days of the third week warm weather continued over the central and eastern districts, and it remained cool in the mountains and far West, but with a tendency to warmer as the week advanced. Warm weather continued in the East and South until shortly after the middle of the week, when temperatures near the normal prevailed. During the latter part of the week cooler weather overspread the northwestern districts, which by the end had extended into the central valleys, and frost occurred in the upper Mississippi Valley and northern Plains States.

The mean temperatures for the week were unseasonably high in the more eastern districts, the averages exceeding the normal by 10° to 15° per day from central Virginia northeastward to New England. The week was cool in the northern Plains States and over much of the Rocky Mountain district, while over the Pacific Coast States the temperature was somewhat above the normal.

During the first few days of the fourth week cooler weather overspread the eastern and southern districts, with frost in the interior of the Middle Atlantic and New England States, while from the Plains region westward moderately warm weather prevailed and by the middle of the week a general warming up was in evidence in all sections except in the Lake region and Pacific coast districts, where lower temperatures obtained. Toward the latter part of the week cooler weather had overspread the Plateau and Mountain regions and nearly all eastern districts.

During the last few days of the month cool weather prevailed over the northern half of the country and in the Rocky Mountain and Plateau districts, with local frosts in the region of the Great Lakes, New England, and the

interior of the Middle Atlantic States, but in the South more seasonable temperatures prevailed. The mean temperatures for the last nine days of the month as a whole were below the normal from the Lake region and Ohio Valley eastward to the Atlantic coast, while over other portions of the country they were generally near the normal, although in most southern districts the weather was moderately warm, and it was very generally cool in the Missouri Valley and the Great Valley of California.

#### PRECIPITATION.

During the first few days of the month fair weather obtained generally throughout the country, except for a few local showers in the Southeastern States and occasional rains to the westward of the Rocky Mountains. About the middle of the week a tropical storm moved from the Gulf to the upper Lake region, attended by high winds and shifting gales along the coast, with considerable damage to crops and other property, while precipitation occurred over most of the districts to the eastward of the Mississippi River. Over other sections of the country showers at scattered points were reported, and the week closed with local rains in the Missouri Valley, the region of the Great Lakes, and at a few points in the Atlantic Coast States, but elsewhere fair weather was general.

For the week as a whole fairly heavy rains fell in the South Atlantic and East Gulf States and thence northward to the lower Lake region, and showers occurred at points in the central and lower Missouri Valley, but elsewhere to the eastward of the Rockies little rain fell during the week, large areas receiving none. Showers occurred over considerable areas in the Rocky Mountain districts and along the extreme north Pacific coast, but over other districts to the westward of the mountains little or no rain fell.

The second week opened with showery weather over the northern States from New England westward to the Pacific and also in the lower Missouri and middle Mississippi valleys, but elsewhere it continued fair. About the middle of the week heavy rains occurred in the region of the Great Lakes and the upper Mississippi Valley, but elsewhere the weather continued fair save for widely scattered local showers. During the latter part of the week rain again occurred quite generally over northern districts from New England nearly to the Pacific coast, with heavy local falls in Michigan and the upper Mississippi Valley.

From the Dakotas eastward to the Great Lakes and thence southward to northern Oklahoma the rainfall for the week as a whole was generous to heavy, ranging mostly from about 2 to 4 inches, while in portions of Ohio and Indiana about 1 inch occurred. Elsewhere to the eastward of the Rocky Mountains but little rain fell, and in large areas, particularly from Texas northeastward to the southern drainage of the Ohio, no precipitation occurred. To the westward of the Rocky Mountains rainfall occurred over the northern districts, but otherwise the week was practically rainless.

At the beginning of the third week scattered showers and thunderstorms occurred at many points to the eastward of the Rockies, the rainfall being moderately heavy locally in Texas and the lower Missouri and the upper Mississippi valleys. During the middle portion of the week unsettled, showery weather obtained in many eastern districts, with some rather heavy rains locally in the central Plains States and the Ohio Valley. Toward the latter part of the week moderate showers occurred over most districts to the eastward of the Plains States, but at the close generally

fair weather obtained in all portions of the country except over the middle Atlantic coast and from the Lake region eastward.

Rainfall occurred at some time during the week in nearly all districts to the eastward of the Rocky Mountains, but the totals were mostly light, although fairly heavy amounts, ranging from 2 to 4 inches, occurred over the lower Missouri, the upper and middle Mississippi valleys, and portions of Illinois and Indiana, while like amounts occurred in more local areas in Texas, Arkansas, and the Florida Peninsula. In the districts to the westward of the Rocky Mountains the week was rainless, except for a few light and widely scattered showers.

During the first few days of the fourth week fair weather obtained over the districts to the eastward of the Rocky Mountains, except for local showers in the Atlantic and Gulf coast sections, which were heavy in parts of Texas, 8.62 inches of rainfall occurring at Corpus Christi within 48 hours. About the middle of the week showers occurred in the west Gulf States, the Northwest, and the region of the Great Lakes, and toward the latter part general rains obtained from the Plateau district eastward over the central and northern districts to the Atlantic. In the South, to the eastward of the Mississippi, the weather continued fair, except that showers occurred over the Florida Peninsula.

During the last few days of the month a tropical storm moved inland near the mouth of the Mississippi, accompanied by heavy rains and winds of hurricane force. Many lives were lost in the lowland districts of the Louisiana and Mississippi coasts and in the vicinity of New Orleans, and the damages to buildings and crops were extensive. After passing inland the storm rapidly diminished in force and moved slowly northeastward. (See also p. 456-466.) During the occurrence of this storm only light rains fell in other districts, mostly in the Northwest.

The rainfall, as a whole, for the last nine days of the month was heavy in the upper Mississippi and middle Missouri valleys, and over the southern States generally, while over the New England and Middle Atlantic States, along the Canadian border, and to the westward of the Rocky Mountains the amounts were small.

#### GENERAL SUMMARY.

The weather for September, 1915, was characterized by almost continuous warmth over the eastern half of the country, which was in marked contrast to the nearly continuous low temperatures over the northern and central portions for several preceding months, the departures for the month averaging from 3° to 6° above the normal over large areas of this section. Rain fell over practically all portions of the country except a small area of the central coastal portion of California, and the falls were heavy over portions of the Gulf States, eastern Tennessee, and a narrow belt from northwestern Texas northeastward to the Upper Lakes.

#### STORM OF AUGUST 1-2, 1915, IN FLORIDA.

The following notes on the storm of August 1-2, 1915, have been extracted from the report of the section director, Jacksonville, Fla., received too late for publication in the August REVIEW:

A storm of considerable energy, attended by torrential rains over portions of the Peninsula, approached the east coast of Florida between Titusville and Jupiter during the forenoon of August 1. The winds throughout the Peninsula indicated a disturbance to the southeast of

Cape Canaveral. On the evening of the 1st the pressure at Titusville was 29.72 inches and the 24-hour rainfall 3.34 inches. The storm center was about 25 miles west of Jacksonville at 7 a. m. of the 2d, with a maximum wind velocity at the latter place of 54 miles, and an average hourly movement of nearly 38 miles for the preceding 12 hours. The American steamship *Fann* ran into the storm off Cape Canaveral about 9 a. m., August 1, wind about 60 miles southeast, barometer 29.57 inches. The high winds were confined, as a rule, to the portion of the Peninsula east of the Suwanee River, while damaging rains extended over the triangular area from Pinellas County on the west coast to Jacksonville and Hypoluxo on the east coast, rainfall intensity being greatest apparently at St. Petersburg, where 15.45 inches fell in 24 hours. An electrical disturbance of great intensity was coincident with the heavy rains. The damage was chiefly to railway tracks, bridges, highways, and other such structures. Some buildings were blown down, but no one was reported to have been killed. Crops on lowlands suffered severely, and even those on high ground did not escape the consequence of heavy rains and a prolonged soggy condition of the soil. The area of greatest damage was over portions of Pinellas, Hillsboro, Manatee, De Soto, Polk, Palm Beach, St. Lucie, and Brevard counties. Summarized press reports show that the total damage was not less than \$250,000.

Average accumulated departures for Sept., 1915.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure from the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	° F.	° F.	° F.	Ins.	Ins.	Ins.	0-10	P. ct.		
New England.....	63.9	+3.2	+9.5	1.07	-2.10	-3.20	4.4	-0.8	71	-10
Middle Atlantic.....	69.5	+3.0	+7.3	2.10	-1.40	-0.90	4.4	-0.3	77	0
South Atlantic.....	75.9	+2.8	+0.4	3.17	-1.80	-5.80	4.4	-0.3	78	0
Florida Peninsula.....	81.7	+0.9	-8.2	4.96	-3.00	-3.70	5.2	-0.2	75	-1
East Gulf.....	78.0	+3.2	+1.0	4.72	+0.80	-3.20	4.4	-0.2	72	-13
West Gulf.....	78.1	+2.4	-5.2	2.76	-0.70	-3.30	4.7	+0.5	72	+4
Ohio Valley and Tennessee.....	65.4	+2.2	-5.4	3.84	+1.30	-1.40	4.5	+0.1	71	+5
Lower Lakes.....	65.3	+2.2	-3.1	3.69	+0.90	+0.10	4.9	+0.1	72	+5
Upper Lakes.....	60.7	+1.5	+3.8	4.42	+1.10	-0.40	5.7	+1.5	82	+5
North Dakota.....	55.3	-1.9	+8.1	1.93	+0.50	-0.60	5.8	+1.4	72	+15
Upper Mississippi Valley.....	66.4	+1.5	-2.9	5.20	+2.30	+0.90	5.4	+1.1	81	+9
Missouri Valley.....	65.7	+0.4	-8.0	4.48	+1.80	+8.50	4.9	+0.9	78	+12
Northern slope.....	54.2	-3.3	-2.1	2.16	-1.10	+2.80	5.9	+1.9	70	+15
Middle slope.....	67.8	+0.3	-12.2	3.11	+1.20	+7.80	4.7	+1.3	71	+13
Southern slope.....	73.5	+0.7	-11.4	3.22	+0.60	+3.40	4.2	+0.4	68	+9
Southern Plateau.....	72.1	-1.4	-17.2	0.19	0.00	+1.50	2.0	-0.5	48	+5
Middle Plateau.....	60.9	-1.4	-2.9	0.88	+0.20	-0.40	2.9	0.0	41	+3
Northern Plateau.....	59.5	-1.7	+12.8	0.72	-0.10	+0.20	4.6	+1.0	47	+5
North Pacific.....	57.8	+0.9	+20.3	0.87	-1.60	-7.70	5.5	+0.2	79	+7
Middle Pacific.....	63.3	-0.1	+6.6	0.02	-0.50	+4.20	2.2	-1.2	59	-4
South Pacific.....	67.9	+0.6	+10.8	T.	-0.20	+3.70	2.4	-0.2	68	+2

Maximum wind velocities, Sept., 1915.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Mis./hr.				Mis./hr.	
Block Island, R. I.	26	60	nw.	New York, N. Y.	17	72	w.
Do.	27	60	nw.	Do.	21	58	nw.
Buffalo, N. Y.	21	50	nw.	Do.	26	72	nw.
Do.	26	72	sw.	Do.	27	54	nw.
Burlington, Vt.	26	50	nw.	Pensacola, Fla.	29	60	so.
Duluth, Minn.	25	50	nw.	Do.	30	64	s.
Green Bay, Wis.	8	54	sw.	Point Reyes Light, Cal.	12	55	nw.
Mobile, Ala.	29	61	se.	Do.	13	54	nw.
Mount Tamalpais, Cal.	12	64	nw.	Do.	22	50	nw.
Do.	13	56	nw.	Do.	23	72	nw.
Do.	17	60	nw.	Do.	24	57	nw.
Do.	18	59	nw.	Portland, Me.	27	50	nw.
Do.	19	50	n.	Providence, R. I.	26	62	nw.
Do.	23	80	nw.	Sandy Hook, N. J.	26	51	nw.
Do.	24	57	nw.	Sand Key, Fla.	3	54	se.
Nantucket, Mass.	26	59	sw.	Do.	27	58	se.
New Orleans, La.	29	86	sw.	Toledo, Ohio	10	52	w.

# WEATHER CONDITIONS OVER THE NORTH ATLANTIC DURING SEPTEMBER, 1914.

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The data presented are for September, 1914, and comparison and study of the same should be in connection with those appearing in the REVIEW for that month. The accompanying Chart IX (XLIII-111) shows for September, 1914, the averages of pressure, temperature, and the prevailing direction of the winds, together with the location and course of the more severe storm tracks of the month. During the month as a whole the distribution of mean atmospheric pressure over the greater part of the ocean was similar to the normal as shown on the Meteorological Chart of the North Atlantic Ocean for September. The Azores high was of normal intensity and position, but of slightly less area than usual. The center of the Icelandic low is not shown on account of lack of observations, but as far as can be judged, it was probably some distance southwest of its normal position. The variations in pressure were marked during the month over the northeastern part of the ocean, as off the west coast of Scotland the barometer readings varied from 29.21 inches on the 14th to 30.40 inches on the 29th, while in the central and southern portions the range was much less. Only two storm tracks could be shown, although on several days disturbances occurred, accompanied by heavy winds, whose centers it was impossible to plot, due to want of data.

On September 2 the British steamship *Megantic* reported a northwest gale of 56 miles an hour, barometer reading of 29.29 inches at latitude 54° N., longitude 48° W., the vessel being about 3° south of the apparent center of the low. By the following day this disturbance was central near latitude 53° N., longitude 37° W., west and northwest winds of 48 miles being reported, and on September 4 and 5 the track of the low could be traced in its easterly movement, as on the latter date the center was near latitude 51° N., longitude 21° W., while the wind had decreased to a moderate breeze and the barometer risen to 29.80 inches. On September 17 a low appeared near latitude 47° N., longitude 41° W., several vessels reporting winds of from 48 to 56 miles an hour. By the 18th it had moved in a westerly direction to latitude 45° N., longitude 49° W., the velocity of the wind remaining about the same. From this point the storm recurved, and on the 19th was central near latitude 47° N. and longitude 45° W., the wind having decreased in violence. By the 20th it had apparently moved some distance to the northward, and while it was impossible to plot the center on account of the lack of observations, a vessel near latitude 50° N., longitude 40° W., reported a northwest wind of 54 miles an hour, the barometer reading 29.50 inches. This is shown as track I on Chart No. 9. On September 24 a low of comparatively light intensity appeared near Pensacola, Fla. This moved slowly along the coast, and on the 25th the center was near Charleston, but the wind still remained light. From this point the storm increased in intensity and in rate of movement, and on September 26 was near latitude 40° N., longitude 68° W. On the 27th it was near latitude 51° N., longitude 50° W., having decreased in intensity, and by the 28th had moved off the limits of the chart. This is shown as track II on Chart No. IX.

*Fog.*—Observations of fog in September for the 6-year period 1901 to 1906, as given on the Meteorological Chart of the North Atlantic Ocean for September, show that the greatest percentage of days for the above period on which fog was observed occurred in the vicinity of the Banks of Newfoundland, the center of the area being near latitude 47° N., longitude 48° W. Here the percentage was given